DOCUMENT RESUME

ED 132 643 95 EA 008 808

TITLE Facilities for Mainstreaming the Handicapped. Educational Facilities Digest 13.
INSTITUTION Council of Educational Facility Planners, Columbus, Ohio.; Oregon Univ., Eugene. ERIC Clearinghouse on Educational Management.
SPONS AGENCY National Inst. of Education (DHEW), Washington, D.C.
PUB DATE Jan 77
CONTRACT OEC-0-8-080353-3514
NOTE 9p.
AVAILABLE FROM Council of Educational Facility Planners, International, 29 West Woodruff Avenue, Columbus, Ohio 43210 ($1.50, quantity discounts, payment must accompany orders)

EDRS PRICE MF-$0.83 HC-$1.67 Plus Postage.
DESCRIPTORS *Annotated Bibliographies; Architectural Barriers; Court Litigation; Elementary Secondary Education; *Facility Guidelines; Facility Planning; *Handicapped Students; *Literature Reviews; *Regular Class Placement; Student Needs

ABSTRACT

Recent court decisions have established the right of handicapped students to public education. Planning or improving school facilities to meet the needs of the handicapped in the least restrictive manner are topics covered in 13 entries in an annotated bibliography and six citations in a supplementary bibliography. All entries are from the ERIC system. (MLF)

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FACILITIES FOR MAINSTREAMING THE HANDICAPPED 13 JANUARY 1977

ED132643

EDUCATIONAL FACILITIES DIGEST

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Prepared by ERIC Clearinghouse on Educational Management
Published by Council of Educational Facility Planners, International

EA 008 808

FACILITIES FOR MAINSTREAMING THE HANDICAPPED

Historically, handicapped children have stood last in line for desirable educational space. Their classrooms have been in outworn or obsolescent buildings, minimally modified basements, and renovated garages. In one instance, trainable retarded children in a northern region were transported to an ancient, woodframe hut whose only heat was from open, coal-burning, pot-bellied stoves. The splintery, damp floor and the rest of the space were lit by four bare light bulbs. That *facility* was located less than 10 yards from a newly constructed elementary school costing $2.5 million dollars.

Birch and Johnstone

Most recent American writings on facilities for the handicapped make it quite clear that such scenes will no longer be tolerated. There has been no sudden outpouring of new funds to build new facilities. Instead, there has been an outpouring of new laws and court decisions that will move those handicapped children across that 30-foot gap and into the new school to sit beside their brothers and sisters, their neighbors, and, if experience breeds understanding, their friends.

Estimates vary as to the percentage of the population that can be characterized as handicapped or disabled, but according to Educational Facilities Laboratories approximately 10 percent of national public school students have one or more disabilities. Of these, around 30 percent are retarded to some degree, another 30 percent have mild speech impairments or learning difficulties, 18 percent are physically handicapped, 14 percent are emotionally disturbed, and the rest are hearing and sight impaired. Providing facilities for this clientele, whether in new or existing structures, is estimated to account for almost 20 percent of current educational construction.

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It is clear that this construction is being undertaken to meet the special needs of the new students. Those who cannot see or hear, are confined to wheelchairs, or otherwise lack mobility would obviously find travel into and through a traditional school building hazardous or, at best, discouraging.

In addition to removing the architectural barriers that confront the physically disabled, the schools must provide spaces in which those who have trouble learning can receive individual remedial help. Hyperactive students need areas in which to let off energy safely and constructively. Centers must be provided in which some of the retarded can practice the skills of daily living.

But there is more to planning facilities for the handicapped than simply providing accessible space. The nature of the environment is also important. The handicapped usually face greater difficulties in socializing than the average student. Too often they are segregated even within the regular educational system by such factors as the need for special transportation (which can restrict their freedom of scheduling, especially at the secondary level), the distinction made between physical education and physical therapy, the placement of work-spaces for the wheelchair-bound on the periphery of classrooms, and so forth. Even the traditional classroom format can prevent some disturbed students from reaching out as they could in less formal, more varied settings.

Above all, coping with these and other facilities-related problems is a matter of staff attitudes. Teachers and administrators who are interested in their students not only can provide innovative solutions to difficulties that cannot be handled within the budget, but also can spark in the students the sense of confidence and desire that makes it possible to overcome the architectural and psychological barriers that must remain, both in and out of school.

The literature also stresses the heterogeneous nature of the disabled population. Their abilities and limitations are so varied that no standards that can be printed in black and white can answer all their needs. Again, concern for the individuals is more vital to success than concern for meeting specifications that were designed with the non-existent "average" disabled person in mind.

In fact, perhaps the most important single factor to consider when planning facilities for mainstreaming the handicapped is that the removal of barriers and the provision of supportive spaces for learning will benefit the entire student body and staff of the school. In many cases, the modifications required to make the building accessible and usable to the handicapped are actually only corrections that would never have had to be made if the educational plant had been designed for its users in the first place. In this sense, the mainstreaming of the disabled provides a hidden boon for regular education–for once, the educational attributes of school facilities will be examined systematically on a nationwide basis, and all of society stands to benefit.

The next publication in the Educational Facilities Digest will contain additional information of interest to those considering facilities for the disabled. It concentrates on facilities for special education, and with the exception of two or three bibliographies does not duplicate materials found in this digest.

Birch, Jack W., and Johnstone, B. Kenneth. ***Designing Schools and Schooling for the Handicapped. A Guide to the Dynamic Interaction of Space, Instructional Materials, Facilities, Educational Objectives and Teaching Methods.*** 1975. 229 pages. ED 122 437.

For Birch and Johnstone, facilities cannot be isolated from other factors when schooling for the handicapped is being planned. The educational philosophy behind any program must be based on a recognition of the individual needs of all children, handicapped or not, as well as on society's expectations of what the end result of education should be. Educational facilities cannot be designed effectively unless they are designed to facilitate the kinds of instruction desired, to accommodate the kinds of materials to be used, and to promote a positive response in the students.

The elimination of architectural barriers is not enough to open facilities to the handicapped. Education is no longer merely a matter of academic instruction enclosed in a box. Spaces must be provided to teach social interaction, especially for those whose physical, mental, or emotional disabilities can make such interaction more difficult to achieve. For the retarded, this type of space can include individually reserved, "private" space; for the emotionally disturbed, spaces permitting high activity levels are important.

Birch and Johnstone's book treats the theory involved in planning educational facilities, including the changing expectations of education, in greater detail than does any other document listed here. They leave standards and specifications to others largely because they feel decisions about individual spaces and equipment must be based on local

needs rather than on simple minimums. Instead, they concentrate on how those needs can be determined so that the entire educational program is unified and effective for all concerned.

A listing of over 170 references is included.

Order copies from Charles C. Thomas, Publisher, 301-327 East Lawrence Avenue, Springfield, Illionois 62703. $14.50.

Goldsmith, Selwyn. *Designing for the Disabled.* London: Royal Institute of British Architects, 1967. 207 pages. ED 032 697.

Too many people are so reluctant to admit that disabled persons are abnormal that they claim special facilities are unnecessary. For Goldsmith, such facilities are more special than glasses or false teeth only because people have refused to incorporate them in their buildings routinely. The well-adjusted disabled person has accepted his or her special needs and is handicapped primarily by the refusal of others to recognize them. Only when special facilities are available everywhere will they cease to be considered special and instead be seen as "normal facilities for ordinary people with special needs."

In the case of schools, children able to communicate (and well enough adjusted to their disabilities to realize that success on the football field is relatively unimportant) should be able to use most normal facilities successfully, given the right opportunities. In fact, one of the most important aspects of providing adequate facilities is making sure the staff of the school is aware of the need to make allowances and does not resent having to do so.

This book contains thousands of specifications based on anthropometrics and on the dimensions of prosthetic devices, all clearly presented with diagrams in a well-ordered reference section.

Order copies from Royal Institute of British Architects, 66 Portland Place, London W1, England.

Kliment, Stephen A. *Into the Mainstream. A Syllabus for a Barrier-Free Environment.* Washington, D.C.: American Institute of Architects, 1975. 51 pages. ED 112 492.

Mainstreaming cannot end at graduation. Successful mainstreaming in the educational system will produce a generation of people ready to enter life as full partners if society is ready to accept them. Educators must be aware not only of how well students succeed in school but also of how well they are being prepared for life outside. And if their labor is not to be in vain, educators should also be concerned about how well that world outside is preparing itself for use by all its citizens.

Luckily, a growing awareness of the needs and the potential of the handicapped is making stricter standards for barrier-free construction more and more acceptable to the public. Educators can help to assure that their efforts in school lead to rewarding lives outside school by working with other concerned citizens on task forces or standing committees to influence decision-makers and the general public, to conduct surveys of local conditions, and to prepare guidebooks and other materials. The expertise gained by educators through daily contact with the handicapped in a mainstreaming situation should be invaluable to those planning noneducational facilities.

One major design element that must be considered is the "interdependence of prosthetic devices." This means that any equipment used to provide the disabled with access to facilities, from wheelchairs to raised numbers on elevator buttons, will be of use only if the disabled persons can get to the equipment to use it or if the equipment will get them somewhere they want to go. Through its adaptation for mainstreaming, the school provides a series of prosthetic devices that lead the disabled at least to graduation. The question is whether the graduates will be able to cross the threshold into society in order to put their education to use.

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Address requests to EDRS, P.O. Box 190, Arlington, Virginia 22210.

Lott, Leroy A., Jr.; Hudak, Barbara J.; and Scheetz, Janet A. *Strategies and Techniques for Mainstreaming: A Resource Room Handbook.* Monroe, Michigan: Monroe County Intermediate School District, 1975. 249 pages. ED 117 890.

The establishment of a resource room program requires careful administrative consideration. The regular classroom teacher and the resource room teacher must cooperate to identify those who need help and ascertain that they get it. Who is to be served must be specified in advance. The authors discuss 12 models that can be followed in establishing the mutual responsibilities of the users of the facility, including consultation, inservice training for regular teachers, counseling, and teaching itself. Lott and his colleagues note that by opening the resource room to nonhandicapped students, including gifted children, who can benefit from individual attention, the stigma of using a special space can be removed for all users.

Three areas should be defined in the room itself—an individual study area, a group study area, and a "reinforcement" area. Individual spaces are ideal for the location of learning machines and individually used audiovisual equipment. The reinforcement area provides a relaxed atmosphere with rugs, upholstered furniture, magazines, and other materials used to associate positive feelings with learning.

The document extensively covers all aspects of resource room theory and practice, in addition to discussing the room's nature as a facility.

Order copies from Leroy Lott, Supervisor for Special Education Programs, Monroe County Intermediate School District, 1101 South Raisinville Road, Monroe, Michigan 48161. $12.50.
Order MF from EDRS, $0.83. Specify ED number.

Molloy, Larry. "The Handicapped Child in the Everyday Classroom." *Phi Delta Kappan,* 56, 5 (January 1975), pp. 337-340. EJ 109 246.

Molloy, citing Wolfensberger, states that "research evidence shows . . . that handicapped children learn less with trained teachers, small segregated classes, and special materials than they learn when integrated into large classes with regular teachers and classmates years ahead of them." Perhaps the most effective way to achieve such integration is to provide special resource centers in conjunction with regular classrooms, where all students can benefit from special equipment or methods as they need them.

Such centers need not be restricted to special sensory-input environments and physical therapy units for the physically impaired. Emotionally disturbed children have been found to respond favorably to open space learning, which allows them to establish independent activities and relationships within smaller groups without the burden of close and formal adult supervision. By the very act of establishing his or her own territory, the disturbed child invests it with therapeutic qualities and turns it into an "invisible resource center."

The mentally retarded and learning-disabled can be assisted through the use of learning centers where anyone needing learning skills, including self-discipline and concentration, can be taught on a more individual basis. A three-step technique called the Madison School Plan first captures interest and attention through a variety of materials and methods, then places the child in a more formal setting where cooperation with others is encouraged, and finally tests the student's ability to cope with the school's standard learning environment before returning to the original classroom.

Molloy, Larry. *One out of Ten: School Planning for the Handicapped.* New York: Educational Facilities Laboratories, 1974. 26 pages. ED 097 777.

Many recent lawsuits against school systems in the United States have resulted in decisions that together make up a "bill of rights" for the handicapped. These rights include "free public education for all handicapped children regardless of the class or the severity of their handicap; an education appropriate to each child's individual needs, including toilet training and self-grooming as reasonable educational objectives; treatment and therapy in accordance with the disability . . . and the right of the least restrictive alternative." This last right means that "handicapped children should be placed where they can obtain the best education at the least distance away from mainstream society."

Facilities for the handicapped usually consist of either a special building or a special restricted wing. The "cascade"

Ken-O-Sha Elementary; Grand Rapids, Mich. Photo courtesy of Milton J. Miller, Dir. of Educational Facility Planning.

concept is based on the idea that different individuals need different degrees of special care. Most can participate in the everyday classroom, some will require the presence of trained personnel, others will need to use special equipment some of the time, and only a few will require special rooms or buildings on a permanent basis. Children should be placed in an environment as normal as possible and encouraged or helped to fit into ever more normal situations.

Trying to meet these new demands effectively could be a very expensive project for a public school district, but cooperation between districts and agencies in planning and providing services could speed the process while easing the burdens. The approaches taken to achieve the goals of mainstreaming can vary considerably, using one or several innovative options. Among these are survival schools, where the community itself becomes a resource center; individualized instruction through the inclusion of special education teachers in teaching teams for integrated classes; the use of counselors who move through the school checking the progress of individuals needing occasional help; and special centers serving as home bases from which students can be eased into the mainstream.

In the second half of the document, examples of successful applications illustrate these possibilities.

Order copies from Educational Facilities Laboratories, 850 Third Avenue, New York, New York 10022. First copy free, each additional copy $0.50. Also available from EDRS. MF. $0.83 HC $2.06. Specify ED number.

Morgan, Michelle. "Beyond Disability: A Broader Definition of Architectural Barriers." *AIA Journal*, 65, 5 (May 1976), pp. 50-53. EJ 138 059.

People are handicapped not by their disabilities but by the barriers placed before them by architects, designers, and others. In fact, according to Morgan, everyone except the "ideal user," who can be described as a "large, healthy, adult male in his late teens or early 20s," is handicapped to some degree. Revolving doors, for example, present barriers and even dangers not only to the disabled but to parents with children, older persons, those carrying parcels, pregnant women, and children by themselves. Those in wheelchairs would be completely excluded if no other entrances were available. Planning for the full range of potential users of any facility should make access easier to all.

There are occasional conflicts, of course. The blind find the clear distinction between curb and street helpful. The curb cut designed to assist those in wheelchairs might even cause the blind to lose balance. In some cases it is best to provide alternatives—stairs as well as ramps, for instance.

Once the disabled gain access, they may be handicapped emotionally by their surroundings. If facilities provided are too obtrusive, with large or numerous labels calling attention to their use by "different" people, it could not only prove embarrassing for the disabled who must use them but also deter their use by people who would benefit from the easier access but do not want to share the cultural stigma attached to using such special equipment.

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Russo, James R. "Mainstreaming Handicapped Students: Are Your Facilities Suitable?" *American School and University*, 47, 2 (October 1974), pp. 25-33. EJ 105 820.

To learn how recent court decisions and state legislation mandating mainstreaming have affected schools, *American School and University* surveyed "schools, colleges, architects, consultants, and organizations for handicapped persons." This special report presents the findings as a series of brief case histories.

The Urbain Plavan School in California was designed to integrate orthopedically handicapped and typical children. One of the areas surrounding a central learning center has special equipment for the handicapped, but these students share all other areas in a building designed for the easiest and fastest possible travel from one area to any other.

A Wisconsin school playground includes a multilevel play structure, a "Trike Run," landscaping, sand and plant play areas, and other equipment, all designed for use by both the handicapped and the nonhandicapped. Design elements from therapeutic equipment were included so that play activities would give the greatest possible benefit to users. Hard surfaces make travel easy, and raised planters, sand and water play areas, and workbenches make many activities available to those confined to wheelchairs. The area was funded entirely by voluntary gifts.

Improvements at the college level include special transportation systems, telephone intercoms for class participation by those unable to travel, and a wheelchair repair service located on campus. The provision of special maps and guidebooks to inform the handicapped of potential barriers and easiest access to services is especially valuable to the college student coping with a large and complex campus.

Steinfeld, Edward. *Barrier Free Access to the Man-Made Environment—A Review of Current Literature. Interim Report.* Syracuse, New York: School of Architecture, Syracuse University, 1975. 45 pages. ED 123 855.

The American National Standards Institute's "American Standard Specifications for Making Buildings and Facilities Accessible to and Usable by the Physically Handicapped"

have been adopted in full or in part by all 50 states. In the years since those standards were recommended, however, much research has been done that has made revision of the standards necessary. This document outlines the developments, provides thorough comparisons of standards suggested by several sources, and offers a large bibliography.

The original standards are too often found to be incomplete, vaguely or ambiguously worded, and limited in scope. One problem in developing adequate standards is that while there are large amounts of data on the dimensions, capacities, and numbers of those suffering from one or more disabilities, the statistics are too often isolated facts. For instance, paralysis tends to strike a disproportionately large number of people at lower income levels, who cannot afford to make modifications in their surroundings or obtain personal assistants. When this information is not available, the raw data on the number of persons suffering from paralysis do not provide an adequate picture of the need for public assistance that exists.

An additional area of importance that has only recently been recognized is the emotional and psychological reaction of the disabled to an environment that limits them at every turn. By restricting access to the able-bodied, designers in effect relegate the disabled to second-class status, a condition that cannot but affect their self-concepts, destroying confidence and reducing personal effectiveness.

Order from EDRS. MF $0.83 HC $2.06. Specify ED number.

Welsh, Edward. "Preparing a School for the Multiple Handicapped." *Instructor*, 83, 3 (November 1973), pp. 90-92. EJ 088 780.

Welsh sets forth a few basic rules for accommodating the multiply handicapped, including using ground floor classrooms, leaving floors unwaxed, and adapting restroom and door hardware to easy use. But his major purpose is to underscore the need for making the facility emotionally and psychologically pleasing. One important step the principal can take toward meeting this challenge is to make certain that the nonhandicapped students understand the disabilities of the new students on a factual basis. Question-and-answer sessions directed by the specialist in each regular classroom, with equipment and materials shown and described, can do a great deal to ease the tensions and misunderstandings of first meetings.

Yuker, Harold E., and others. *The Modification of Educational Equipment and Curriculum for Maximum Utilization by Physically Disabled Persons. Design of a School for Physically Disabled Students.* Albertson, New York: Human Resources Center, 1968. 53 pages. ED 031 022.

Educational facilities for the physically disabled should allow for maximum independence of the student while providing training for transition to the outside world. The independent student develops a better self-concept and requires less help from the staff. On the other hand, when such independence is achieved through specialized modifications that may not be available outside, the student may not be adequately prepared for true independence later.

Four major considerations ought to govern the design of a facility for use by the disabled. The range of movement of the users may be limited; their strength is usually less and may be restricted in its directional efficiency; the dimensions of prosthetic devices must be considered, so that, for example, two wheelchairs could pass at the corner of a hallway, and, finally, materials that can withstand contact with such equipment should be used in construction.

Classroom sizes should be larger when disabled students attend, with more space for maneuvering. An exterior door equipped with a panic bar is recommended in every room for emergency use. Reducing glare through the use of indirect lighting is another important safety measure.

Science laboratories can be made safe for use by the disabled if traditional layouts are not insisted on. Allowing space for wheelchairs, lowering some work stations, and providing accessible storage can reduce accident potential.

The document also discusses occupational training centers, recreational areas, cafeteria design, the library, swimming pools, sanitary facilities, closets and other storage, and parking areas.

Order from EDRS. MF $0.83 HC $3.50. Specify ED number.

Yuker, Harold E., and others. *The Modification of Educational Equipment and Curriculum for Maximum Utilization by Physically Disabled Persons. Educational and School Equipment for Physically Disabled Students.* Albertson, New York: Human Resources Center, 1967. 66 pages. ED 034 385.

Citing the experiences of the Human Resources Center in providing education for both able-bodied and disabled children in the same facilities, Yuker and his coauthors do not simply go along with traditional approaches to mainstreaming the handicapped. In addition to stating that care in the selection and location of standard equipment is more important than seeking expensive and often insufficiently flexible special equipment, they offer several insights into problems that the inexperienced might not foresee.

A greenhouse, they argue, is not as esoteric a piece of equipment as it might seem when the normal experience of the disabled child is considered. Often restricted to an indoor, urban environment, such a child only rarely comes into close contact with the natural world. A greenhouse allows visual contact as well as gives the child a chance to get close enough to the soil for real involvement.

The authors are also concerned over the segregation of physical education and physical therapy facilities, believing that this proves "self-defeating since the goal of adapted physical education is the integration of these two factors."

Use of nonspecialized equipment such as mirrors and audiovisual equipment can greatly facilitate learning for the disabled. This document concentrates on equipment (with the realization that training the disabled with standard materials will make for an easier transition to life outside the school) more than on facilities. A list of manufacturers

Ken-O-Sha Elementary, Grand Rapids, Mich. Photo courtesy of Milton J. Miller, Dir. of Educational Facility Planning.

and a bibliography of descriptive brochures and catalogs are included.

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Yuker, Harold E., and others. *The Modification of Educational Equipment and Curriculum for Maximum Utilization by Physically Disabled Persons. The Transportation of Physically Disabled Students.* Albertson, New York: Human Resources Center, 1967. 38 pages. ED 034 384.

Accessibility of areas within a building is important for the physically handicapped, but only if they can get to the building in the first place. While this monograph does not address the question of how to locate facilities for maximum use, it does recognize that getting disabled children into safe vehicles for transport to the learning center is an important concern.

Use of standard school buses has been successful but has many drawbacks, among which are the frequent need for assistants to help students on and off, the time required for moving the children, and the sense of dependency fostered.

Buses with hydraulic lifts make wheelchair loading easier, as do the large rear and side doors of many vans. Installation of safety devices such as wheel locks and specialized safety belts is also necessary.

Transportation is eased by mainstreaming in many cases, since travel time for students is reduced and transportation routes shortened. When a central school is used, "feeder routes" are suggested, by which is meant the use of vans to collect children at a central point for transfer to larger vehicles.

A long bibliography and impressive list of other information sources are provided.

Order from EDRS. MF $0.83 HC $2.06. Specify ED number.

SUPPLEMENTARY BIBLIOGRAPHY

Baas, Alan M. *Environments for the Physically Handicapped. Educational Facilities Review Series, Number 8.* Eugene, Oregon: ERIC Clearinghouse on Educational Management, University of Oregon, 1972. 6 pages. ED 066 793 MF $0.83 HC $1.67. Provides a brief analysis of literature on facilities for the handicapped, including both basic building criteria and research into total environmental requirements as treated in 24 references from the ERIC system through early 1972.

Council for Exceptional Children. *Physicel Facilities: A Selected Bibliography, Exceptional Child Bibliography Series No. 634.* Reston, Virginia: Information Center on Exceptional Children, 1973. 27 pages. ED 084 765 MF $0.83 HC $2.06. Contains approximately 100 abstracts of documents reflecting thinking prior to 1973 on the full range of facilities for the handicapped. Some but not all are available through the ERIC system.

Educational Facilities Laboratories. *Arts and the Handicapped. An Issue of Access. A Report.* New York: 1975. 80 pages. ED 117 829 MF $0.83 HC $4.67. (Also available from Educational Facilities Laboratories, Inc., 850 Third Avenue, New York, New York 10022. $4.00.) Discusses the need for mainstreaming in our cultural institutions as well as in our educational systems, using 131 examples.

Gardner, John C. "Help Eliminate Architectural Barriers." *American School and University*, 47, 2 (October 1974), pp. 34-36, 38. EJ 105 821. A simplification of guidelines put out by the State University Construction Fund of the State University of New York, touching on entrances, ramps, stairs, doors, walks, intersections, parking, bus service, rest rooms, and elevators.

State University Construction Fund. *Making Facilities Accessible to the Physically Handicapped.* Albany, New York: 1967. 43 pages. ED 029 439 MF $0.83 HC $2.06. (Also available from State University Construction Fund, 194 Washington Avenue, Albany, New York 12210.) A classic compilation of standards for construction and modification of facilities for use by both the permanently and the temporarily handicapped. Contains a 19-item bibliography.

University of Wisconsin. *Architectural Barriers to Physically Disabled Persons in Wisconsin's Vocational, Technical, and Adult Education System. Final Report.* Menomonie, Wisconsin: Center for Vocational, Technical, and Adult Education, 1975. 135 pages. ED 115 941 MF $0.83 HC $7.35. Describes a method for generating a checklist of standards against which schools throughout the state can be measured for accessibility to the physically handicapped.

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EA 008 808

prepared by
ERIC Clearinghouse on Educational Management
University of Oregon
Eugene, Oregon 97403

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Council of Educational Facility Planners, International
29 West Woodruff Avenue
Columbus, Ohio 43210